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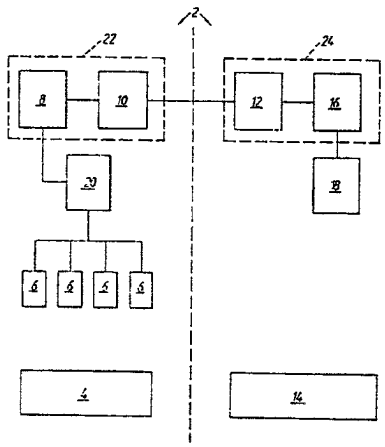
(71) Applicant: **SAYZEN LIMITED**
53 Brookwood Road
Southfields London SW18 5BQ (GB)

(72) Inventor: **Hale, Christopher John**
53 Brookwood Road
Southfields London, SW18 5BQ (GB)

(74) Representative: **Jones, Graham H.**
Graham Jones & Company 77 Beaconsfield Road
Blackheath
London SE3 7LG (GB)

(54) **An aircraft surveillance system.**

(57) An aircraft surveillance system (2) comprising an aircraft (4), at least one closed circuit slow scan television camera (6) which is positioned in the aircraft (4) and which is for surveying a predetermined area, first transducer means (8) which is positioned in the aircraft (4) and which is for converting video signals from the camera (6) into audio signals, first transceiver means (10) which is positioned in the aircraft (4) and which is for transmitting the audio signals from the first transducer means (8) and for receiving command signals, second transceiver means (12) which is positioned in a command base (14) remote from the aircraft (4) and which is for receiving the audio signals from the first transceiver means (10) and for sending the command signals, second transducer means (16) which is positioned in the command base (14) and which is for converting the audio signals received from the second transceiver means (12) into video signals, and at least one television monitor (18) for providing a visual display consequent upon receiving the video signals from the second transducer means (16).



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Description

AN AIRCRAFT SURVEILLANCE SYSTEM

This invention relates to an aircraft surveillance system.

It is an aim of the present invention to provide an aircraft surveillance system which can be used to survey the inside of an aircraft during an emergency such for example as a hijack or which can be used to survey land or objects outside the aircraft such for example as a border sheltering terrorists.

Accordingly, this invention provides an aircraft surveillance system comprising an aircraft, at least one closed circuit slow scan television camera which is positioned in the aircraft and which is for surveying a predetermined area, first transducer means which is positioned in the aircraft and which is for converting video signals from the camera into audio signals, first transceiver means which is positioned in the aircraft and which is for transmitting the audio signals from the first transducer means and for receiving command signals, second transceiver means which is positioned in a command base remote from the aircraft and which is for receiving the audio signals from the first transceiver means and for sending the command signals, second transducer means which is positioned in the command base and which is for converting the audio signals received by the second transceiver means into video signals, and at least one television monitor for providing a visual display consequent upon receiving the video signals from the second transducer means.

The aircraft surveillance system of the invention is especially useful for surveying the inside of an aircraft during a hijack. When a hijack occurs, the hijackers invariably inform ground control that they have hijacked the aircraft and, with the surveillance system of the present invention, it is only necessary for the ground control to issue an appropriate command signal to cause the camera to operate and to cause pictures of the hijack to be transmitted back to a television monitor in ground control. The transmitted pictures can be enlarged as may be desired, for example to ascertain the identity of a hijacker and/or whether or not the hijacker has a real gun, grenade or the like or whether the gun, grenade or the like is an imitation device. It will thus be apparent, that by the time the aircraft is forced to land at its destination determined by the hijacker, ground control will be in a good position to know exactly what action to take.

The aircraft surveillance system of the invention is also of a special use for surveying land. In this case, the aircraft will usually be a slow flying aircraft such for example as a helicopter, as opposed to a passenger flying aircraft. Pictures of the land can be relayed to a command base and the pictures may help to establish the position of terrorists, escaped prisoners or the like on the land.

The pictures can be displayed as black and white or colour pictures.

The command base will usually be a ground command base but, if desired, the command base could be in another aircraft, a ship or a vehicle.

The command signals will usually be start-up signals for initiating operation of the aircraft surveillance system. However, if desired, the start-up signals may be other signals for actuating the commencement of other desired functions.

The first and the second transceiver means may be substantially identical pieces of equipment.

The first transducer means will usually convert the video signals from the camera to audio signals on cassette tape. The audio signals will usually be transmitted from the aircraft to the command base as radio signals. For example, the audio signals may be transmitted on normal aircraft radio frequencies such for example as the aircraft Mayday frequency.

Advantageously, the first transducer means and the first transceiver means are housed together in a single piece of equipment. Similarly, the second transducer means and the second transceiver means are also advantageously housed together in a single piece of equipment. Such single pieces of equipment can be arranged to be mobile or static.

The transducer means and the transceiver means are advantageously in the form of a single piece of equipment known as IBSONSCAN II. The IBSONSCAN II is manufactured and sold by Ibsonmain Limited, of Uxbridge, Middlesex, England. Other equipment can of course by used if desired.

Preferably, the first and the second transceiver means record on to tape so that they have a playback facility for helping repeated surveillance of an area or an object in that area.

Usually, the first and the second transceiver means will have a rewind facility.

Any appropriate camera may be employed. Examples of cameras that may be employed are those manufactured by Ademco,Philips and Norbane. The cameras may be positioned where desired and appropriate in the aircraft. For example, for a passenger aircraft there will usually be one camera positioned in the cockpit together with a number of other cameras positioned in the passenger, accommodation of the aircraft, the actual number of cameras employed being dependent upon the size of the passenger accommodation. For a jumbo jet, it is envisaged that at least four cameras will be required for the passenger accommodation, whilst it is envisaged that a minimum of two cameras will be required for the passenger accommodation of a Boeing 737 or a Boeing 757.

The cameras will usually be connected to the aircraft TPU power circuit to ensure that the power to the cameras cannot easily be switched off. Indeed, it is desirable that the entire aircraft surveillance system is such that it cannot by switched on or off or otherwise generally interferred with by aircraft personnel so that, in the event that the hijackers should know that they are being filmed, they cannot instruct the aircraft personnel to switch off the aircraft surveillance system.

The cameras can be positioned at random

positions in the same type of aircraft if desired in order that hijackers cannot easilly know the location of the cameras. The cameras can also be concealed where possible, for example in overhead compartments, again so that their presence cannot easily be established.

Preferably, the aircraft surveillance system is such that the TV monitor has a picture hold facility.

The aircraft surveillance system may be one which has a visual display facility only, the signals passing from the aircraft to the command base then being signals which are only for permitting the visual display. Alternatively, the aircraft surveillance system may be one which has a visual display facility and also a speech facility, the signals passing from the aircraft to the command base then being first signals which permit the visual display and second signals which permit the speech.

An embodiment of the invention will now be described solely by way of example and with reference to the accompanying drawing which shows in diagrammatic form an aircraft surveillance system.

Referring to the drawing, there is shown an aircraft surveillance system 2 comprising an aircraft 4 and four closed circuit slow scan television cameras 6 which are positioned in the aircraft 4 and which are for surveying predetermined areas in the aircraft 4 such for example as the cockpit area and the passenger areas. One camera 6 will be employed for surveying each predetermined area.

The aircraft surveillance system 2 also comprises first transducer means 8 which is positioned in the aircraft 4 and which is for converting video signals from the cameras 6 into audio signals. First transceiver means 10 is positioned in the aircraft 4 and is for transmitting the audio signals from the first transducer means 8 and for receiving command signals.

The aircraft surveillance system 2 also comprises second transceiver means 12 which is positioned in a command base 14 remote from the aircraft 4 and which is for receiving audio signals from the first transceiver means 10 and for sending the command signals. The command base 14 is also provided with second transducer means 16 which is for converting the audio signals received by the second transceiver means 12 into video signals. A television monitor 18 is linked to the second transducer means 16 for providing a visual display consequent upon receiving the video signals from the second transducer means 16.

The cameras 6 are controlled by a control device 20 which is activated by receiving appropriate control signals from the first transducer means 8. The control device 20 can be used to make the cameras 6 pan, tilt, zoom or perform other functions. The control device 20 can also be used to activate lights or perform other control functions.

The first transducer means 8 and the first transceiver means 10 are advantageously formed together in a single housing as a single piece of equipment 22. Similarly, the second transceiver means 12 and the second transducer means 16 are advantageously formed together in a single housing as a single piece of equipment 24. The equipment 22,24 is advantageously the equipment referred to above and known as IBSONSCAN II. The equipment 22,24 is such that it enables the pictures to be set as a continuous series of still pictures, updated every twenty two seconds, through standard voice frequency radio channels. The equipment 22 is able to take a television frame from the television cameras 6, convert the video signals to audio signals, record then, dial the command base 14, make a security check, and send the pictures, if desired accompanied by the time, date, source and any other required information. The equipment 24 is able to receive the signals from the equipment 22, make a security check, accept the signals, and record the signals, The equipment 24 contemporaneously restores the signal to a video mode and allows the picture to be displayed on the television monitor 18, together with any other transmitted information such for example as the above mentioned time, date and source.

The equipment 22,24 can control the entire aircraft surveillance system 2 and the transmitting equipment by sending up to sixty four separate instructions. If a poor connection is made, the equipment 22 can be instructed to rewind and replay its recording of an entire sequence. The equipment 24 can receive an entire transmission and it also has the facility to enable a single frame to be held on the television monitor 18. An entire transmission can be played back later for analysis and hard copying if desired.

It is envisaged that the aircraft surveillance system 2 will be especially useful for dealing with hijack situations and also for enabling aircraft border patrols to spot terroriste.

It is to be appreciated that the embodiment of the invention described above with reference to the accompanying drawing has been given by way of example only and that modifications may be effected. Thus, for example, more or less than the illustrated four cameras 6 may be employed, and more than one television monitor 18 may also be employed. Also, the cameras 6 could be directed outside an aircraft to survey a predetermined area such as a border or a coastline.

Claims

1. An aircraft surveillance system comprising an aircraft, at least one closed circuit slow scan television camera which is positioned in the aircraft and which is for surveying a predetermined area, first transducer means which is positioned in the aircraft and which is for converting video signals from the camera into audio signals, first transceiver means which is positioned in the aircraft and which is for transmitting the audio signals from the first transducer means and for receiving command signals, second transceiver means which is positioned in a command base remote from the aircraft and which is for receiving the audio signals from the first transceiver means and for

sending the command signals, second transducer means which is positioned in the command base and which is for converting the audio signals received by the second transceiver means into video signals, and at least one television monitor for providing a visual display consequent upon receiving the video signals from the second transducer means.

2. An aircraft surveillance system according to claim 1 in which the first transducer means is for converting the video signals from the camera to audio signals on cassette tape.

3. An aircraft surveillance system according to claim 1 or claim 2 in which the first transducer means and the first transceiver means are housed together in a single piece of equipment, and in which the second transducer means and the second transceiver means are also housed together in a single piece of equipment.

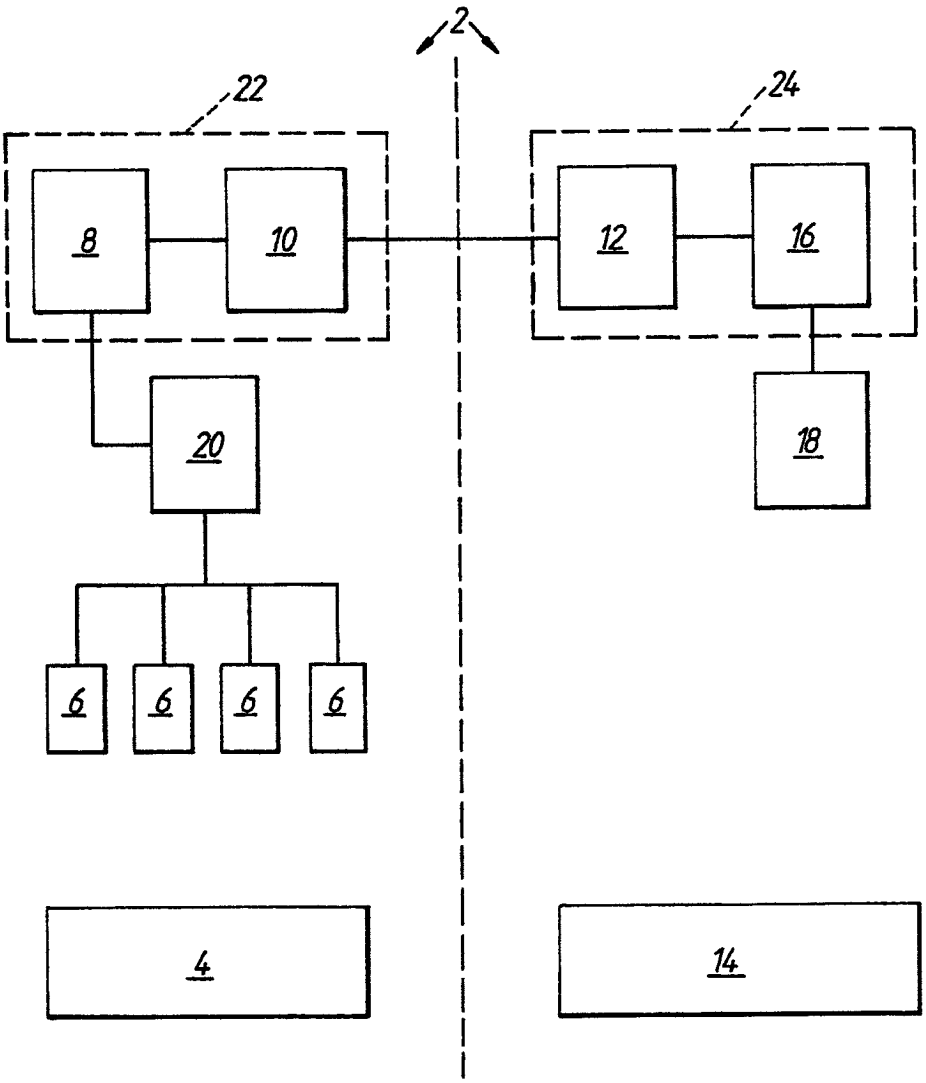
4. An aircraft surveillance system according to any one of the preceding claims in which the first and the second transceiver means record on to tape so that they have a play back facility for helping repeated surveillance of an area of an object in that area.

5. An aircraft surveillance system according to any one of the preceding claims in which the first and the second transceiver means have a rewind facility.

6. An aircraft surveillance system according to any one of the preceding claims in which the television monitor has a picture hold facility.

7. An aircraft surveillance system according to any one of the preceding claims and which has a visual display facility only, the signals passing from the aircraft to the command base then being signals which are only for permitting the visual display.

8. An aircraft surveillance system according to any one of claims 1 - 6 and which has a visual display facility and also a speech facility, the signals passing from the aircraft to the command base then being first signals which permit the visual display and second signals which permit the speech.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(71) Applicant: **SAYZEN LIMITED**
53 Brookwood Road
Southfields London SW18 5BQ(GB)

(72) Inventor: **Hale, Christopher John**
53 Brookwood Road
Southfields London, SW18 5BQ(GB)

(74) Representative: **Jones, Graham H.**
Graham Jones & Company 77 Beaconsfield Road Blackheath
London SE3 7LG(GB)

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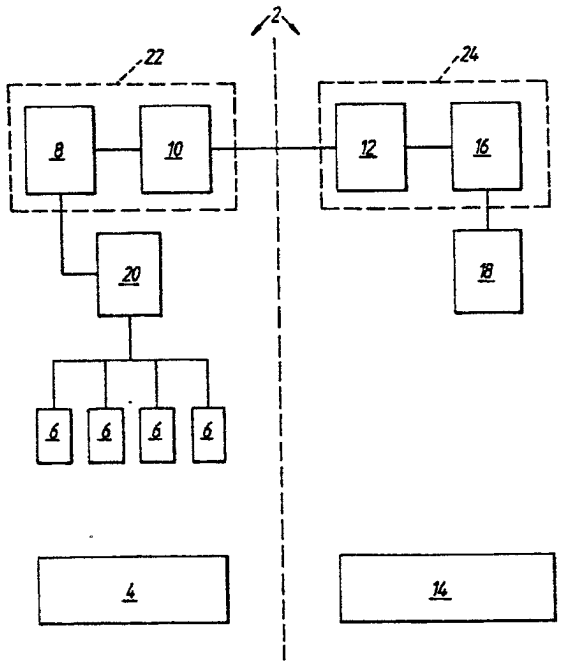

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EUROPEAN SEARCH REPORT

Application Number

EP 87 30 0392

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
Y	EP-A-0 137 320 (ATIS) * Page 3, line 33 - page 4, line 33; figure 1 *	1-7	G 08 B 13/18
Y	EP-A-0 028 933 (ASCOTTS LTD) * Page 4, line 23 - page 5, line 29; figure 1 *	1-7	
A	CH-A- 651 984 (DUCROT) * Whole document *	1,8	
A	FR-A-2 551 240 (ARPHI) * Abstract *	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

G 08 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	22-11-1988	SGURA S.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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